BLACK BOX NETWORK SERVICES

DFCS 10/100M Standalone Self-Managed Media Converter User Manual

Tabletop Models			
Description	Power		
Fiber Type / Model / Wavelength / Distance	US 110VAC 60Hz	International 100-240VAC 50-60Hz	DC Power 7-15VDC (user supplied)
ST / MM / 1310nm / 5km	LMC3100A	LMC3100AE	LMC3100A-DC
ST / SM / 1310nm / 30km	LMC3101A	LMC3101AE	LMC3101A-DC
SC / MM / 1310nm / 5km	LMC3102A	LMC3102AE	LMC3102A-DC
SC / SM / 1310nm / 30km	LMC3103A	LMC3103AE	LMC3103A-DC
SC / SM / SF / Tx1310nm / RX1550nm / 20km	LMC3104A	LMC3104AE	LMC3104A-DC
SC / SM / SF / Tx1310nm / Rx1550nm / 40km	LMC3105A	LMC3105AE	LMC3105A-DC
SC / SM / SF / Tx1550nm / Rx1310nm / 20km	LMC3106A	LMC3106AE	LMC3106A-DC
SC / SM / SF / Tx1550nm / Rx1310nm / 40km	LMC3107A	LMC3107AE	LMC3107A-DC

Wall-Mountable Models			
Description	Power		
Fiber Type / Mode / Wavelength / Distance	US 110VAC 60Hz	International 100-240VAC 50-60Hz	DC Power 7-15VDC (user supplied)
ST / MM / 1310nm / 5km	LMC3108A	LMC3108AE	LMC3108A-DC
ST / SM / 1310nm / 30km	LMC3109A	LMC3109AE	LMC3109A-DC
SC / MM / 1310nm / 5km	LMC3110A	LMC3110AE	LMC3110A-DC
SC / SM / 1310nm / 30km	LMC3111A	LMC3111AE	LMC3111A-DC
SC / SM / SF / T1310nm / Rx1550nm / 20km	LMC3112A	LMC3112AE	LMC3112A-DC
SC / SM / SF / T1310nm / Rx1550nm / 40km	LMC3113A	LMC3113AE	LMC3113A-DC
SC / SM / SF / Tx1550nm / Rx1310nm / 20km	LMC3114A	LMC3114AE	LMC3114A-DC
SC / SM / SF / Tx1550nm / Rx1310nm / 40km	LMC3115A	LMC3115AE	LMC3115A-DC
Optional Accessories			
LMC3001A	Standard Straight-Through Serial Cable - 3ft. DB-9 male to female		
LMC3003D	*DFCS* SNMP Software for Windows 9x/XP/Nt/2000		
LMC207-DRM	Universal DIN-Rail Mounting Kit		

ABOUT THIS MANUAL:

This document supports revision "xx/14" of the *DFCS* 10/100T-FX Managed Module "10/100M". Please refer to the serial number label on the 10/100M for the revision number of your product. This revision incorporates the Initial Product Release of the 10/100M.

OVERVIEW:

The *DFCS* 10/100M Standalone Media Converter and Network Interface Device (NID) provides 10Base-T or 100Base-Tx UTP to 100Base-Fx fiber media conversion with integrated SNMP management capability for self-management and Operations, Administrations and Maintenance (OAM) functionality. The 10/100M Standalone is available with an external AC or DC power supply in a tabletop or a wall-mountable housing. Fiber transceivers are available for multimode (MM) and single-mode (SM) dual fiber (DF), and single-mode single-fiber (SF).

Several Link Modes (fault-detection capabilities) are available through the 10/100M, including Link Segment (Normal Mode), Link Propagate (Link Loss Carry Forward), Remote Fault Detection and Symmetrical Fault Detection. The 10/100M also re-modulates and regenerates outbound data signals to prevent signal degradation.

The 10/100M is a fully-managed media converter that provides monitoring of network and equipment status, remote configuration of converter parameters and generation of SNMP traps. The 10/100M collects and reports real-time network and equipment status such as link status. Network administrators can control converter settings including bandwidth allocation, port access control and VLAN through the use of the remote management capability. The 10/100M is capable of generating traps to notify the SNMP management software of standard and enterprise-specific trap events (MIB available upon request), including Dying Gasp (Power Loss Trap).

The IP-based remote management of the 10/100M can be accessed by *DFCS* SNMP Network Management Software, third-party SNMP clients and Telnet. The management IP address is configured manually or as a DHCP client in the configuration menu. IP-less remote management is supported via 802.3ah OAM or Secure OAM protocol. A menu-driven CLI is accessible via Telnet, serial console port, or a modem connection to the serial console port.

By offering end-to-end OAM management capabilities with a secure demarcation point, the 10/100M is the ideal customer premises solution in the First-Mile for Metropolitan Area Networks (MANs).

Advanced Features:

The 10/100M features Port VLAN, Tag VLAN with Q-in-Q and QoS prioritization which are defined in IEEE 802.1Q and 802.1p specifications. These specifications allow for secure segregation of data traffic flow between the fiber ports and the management processor. Access to the management control can be restricted with the Port VLAN and Tag VLAN features, preventing packet-sniffing and unauthorized management access.

Other advanced features include Bandwidth Control, real-time MIB statistics reporting (38 variables), and Port

Access Control, which facilitates enabling and disabling of individual ports.

Note that full MIB statistics and SNMP-trap reporting require the use of *DFCS* SNMP Management Software or third-party SNMP management software.

For more information on using and configuring the Advanced Features, please refer to the *DFCS* SNMP Management Software user manual.

PORT STRUCTURE:

Serial Console Port:

The front-panel of the 10/100M features a Serial RS-232 Console Port which can be connected to a computer for initial setup and configuration. The Serial Console Port is a mini DIN-6 female port and can be connected to a computer's DB-9 serial port. This is accomplished through the use of a special mini DIN-6 male to DB-9 female cable adapter, which is included with the 10/100M.

An optional DB-9 male to female straight-through serial cable is available for extension (LMC3001A). See the Optional Accessories table for additional accessories.

Front-Panel Ethernet Ports:

Using a 3-port switch architecture, the 10/100M features one 100Mpbs fiber port (P1) and one 10/100Mbps UTP port (P2) on the front-plane. The third port on the switch is internally connected to the on-board management processor.

LINK MODES:

In order to accommodate different user needs, the 10/100M supports several different link modes.

In "Link Segment" (LS), sometimes referred to as the Normal mode, a port transmits a Link signal independently of any received Link at any other port. For example, the UTP transmits a Link regardless of the fiber receiving a Link [Fig. 1(a) & (b)].

In "Link Propagate" (LP), sometimes referred to as Link Loss Carry Forward, a port transmits a Link signal only when receiving a Link at its other port. For example, the UTP transmits a Link only when receiving a Link at the fiber port [Fig. 1(c)].

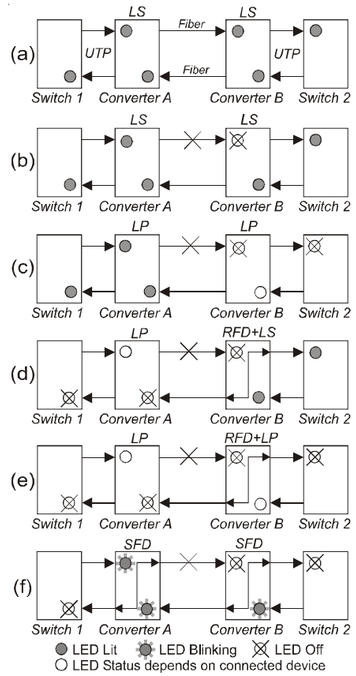

Fig. 1 10/100M Link Modes

In "Remote Fault Detection" (RFD+LS), the fiber port transmits a Link signal only when receiving a Link. As a result, fiber faults (no Link received at the fiber) are looped-back and can be reported to the network core [Fig. 1(d)].

In Remote Fault Detection + Link Propagate (RFD+LP), each port transmits a Link signal only when receiving a Link at both the fiber and UTP ports. As a result, fiber and UTP faults are looped-back and can be reported to both the network core and the network edge [Fig. 1(e)].

In Symmetrical Fault Detection (SFD), fiber and UTP faults are looped back and can be reported to the network core. In addition, connecting two paired converters set to SFD facilitates dual-loop-back, which reports fiber and UTP faults to both ends of the network [Fig. 1(f)].

Note that connecting two converters set to RFD mode is illegal and will cause a "deadly embrace" lockup.

Note that converters in SFD mode must be deployed in pairs.

DIP-SWITCH SETTINGS:

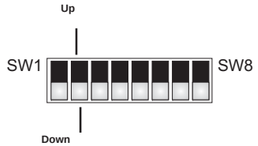

Fig. 2 10/100M DIP-Switches

DIP-Switch Settings Table:

Switch	Down (Factory Default)	Up
SW1	**Off:** Pause Disable	**On:** Pause Enable
SW2	**FDX:** Fiber Full-Duplex	**HDX:** Fiber Half-Duplex
SW3	**AN:** UTP Auto-Negotiation	**Man:** UTP Manual Negotiation
SW4	**100:** UTP 100Mbps	**10:** UTP 10Mbps
SW5	**FDX:** UTP Full-Duplex	**HDX:** UTP Half-Duplex
SW6	**LS:** Link Segment	**LP:** Link Propagation
SW7	**Off:** RFD off	**RFD:** Remote Fault Detection
SW8	**Off:** SFD off	**SFD:** Symmetrical Fault Detection

SW1 Pause Disable/Enable "Off/On" DIP-Switch:

When a port is operating in Auto-Negotiation, its Pause operation mode is determined by the Pause capability advertised during Auto-Negotiation between itself and the link partner. The port advertises its Pause capability during Auto-Negotiation based on the Pause Disable/Enable DIP-switch setting. Setting the Pause DIP-switch to the DOWN "Off" position (factory default) forces the port to negotiate to No Pause mode with its link partner. Setting the Pause DIP-switch to the UP "On" position

allows the port to negotiate to Symmetrical Pause, Asymmetrical Pause or No Pause mode with its link partner.

When a port is operating in Manual mode, its Pause operation mode is based on the Pause Disable/Enable DIP-switch setting. Setting the Pause DIP-switch to the DOWN "Off" position (factory default) forces the port to operate in No Pause mode. Setting the Pause DIP-switch to the UP "On" position allows the port to operate in Symmetrical Pause mode.

SW2 Fiber Full/Half-Duplex "FDX/HDX" DIP-Switch:

When the fiber Full/Half-Duplex DIP-switch is in the DOWN "FDX" position (factory default), the fiber operates in Full-Duplex mode to facilitate a connection to a switch or a workstation that supports Full-Duplex operation. Setting this DIP-switch to the UP "HDX" position facilitates a Half-Duplex connection to a hub (with a shared/non-switched fiber port) or a workstation that supports only Half-Duplex.

SW3 UTP Auto/Manual Negotiation "AN/Man" DIP-Switch:

When this DIP-switch is in the DOWN Auto-Negotiation "AN" position (factory default), the UTP port automatically determines the speed and duplex mode of the connecting UTP device. If the connecting UTP device cannot provide the proper signal to indicate its own mode of operation, then this DIP-switch should be set to the UP "Man" position. Manual mode requires manually configuring the UTP port to match the speed and the duplex mode of the connecting UTP device (configurable using the "10/100" and UTP "FDX/HDX" DIP-switches).

SW4 UTP 10/100Mbps "10/100" DIP-Switch:

When the UTP "AN/Man" DIP-switch (described above) is in the Manual "Man" position, the "10/100" DIP-switch determines the speed of operation for the UTP port. Setting the "10/100" DIP-switch to the DOWN "100" position (factory default) forces the UTP port to operate at 100Mbps. Setting this DIP-switch to the UP "10" position forces the UTP port to operate at 10Mbps. Adjust the "10/100" DIP-switch to match the speed of the connecting UTP device.

When the UTP "AN/Man" DIP-switch is in the Auto Negotiate "AN" position and the UTP 10/100 DIP-switch is in the "100" position, the UTP port auto-negotiates to 100Mbps or 10Mbps. When in the "10" position, the UTP port only operates at 10Mbps.

SW5 UTP Full/Half-Duplex "FDX/HDX" DIP-Switch:

When the UTP "AN/MAN" DIP-switch is in the "Man" position, the UTP "FDX/HDX" DIP-switch determines the duplex operation mode for the UTP port. Setting the UTP "FDX/HDX" DIP-switch to the DOWN "FDX" position (factory default) forces the UTP port to operate in Full-Duplex. Setting this DIP-switch to the UP "HDX" forces the UTP port to operate in Half-Duplex. Adjust the UTP "FDX/HDX" DIP-switch to match the connecting device.

When the UTP "AN/Man" DIP-switch is in the Auto Negotiate "AN" position, and the UTP "FDX/HDX" DIP-switch is in the Full-Duplex "FDX" position, the UTP port auto negotiates to Full or Half-Duplex. When in the Half-Duplex "HDX" position, the UTP port functions only in Half-Duplex.

SW6, SW7 and SW8 Link Mode DIP-Switches:

These three DIP-switches configure the link mode settings described in the LINK MODES section (see pages 5 and 6). The following table details possible Link Mode DIP-switch configurations.

Link Mode DIP-Switch Settings Table:

SW6	SW7	SW8	Result
LS	OFF	OFF	Enables Link Segment mode (LS).
LP	OFF	OFF	Enables Link Propagate mode (LP).
LS	RFD	OFF	Enables Remote Fault Detection mode plus Link Segment mode (RFD+LS).
LP	RFD	OFF	Enables Remote Fault Detection mode plus Link Propagation mode (RFD+LP).
LS	OFF	SFD	Enables Symmetrical Fault Detect mode (SFD).
LP	OFF	SFD	Illegal setting. LS mode is enabled.
LS	RFD	SFD	Illegal setting. LS mode is enabled.
LP	RFD	SFD	Illegal setting. LS mode is enabled.

Note that connecting two converters set to RFD mode is illegal and will cause a "deadly embrace" lockup.

INSTALLATION PROCEDURE:

The following steps outline the installation and configuration procedures for the 10/100M. Refer to the specified sections for detailed instructions.

1. Determine the DIP-switch settings and set the switches accordingly (see DIP-SWITCH SETTINGS, pages 7-9).
2. Connect the UTP port via a Category 5 cable to a 10Base-T or 100Base-Tx Ethernet device.
3. Attach the fiber port via an appropriate multimode or single-mode fiber cable to a 100Base-Fx Ethernet device. The 10/100M transmit (Tx) must attach to the receive side on the other device; the receive (Rx) must attach to the transmit side. When using single-fiber (SF) media converter models, the Tx wavelength on one end has to match the Rx wavelength on the other. Note that based on this guideline, the SF media converter models must be used in pairs, such as the LMC3104A matched with the LMC3106A.
4. Connect the Serial Console Port of the 10/100M to an RS-232 port on the computer.
5. Perform the initial configuration of the 10/100M (see INITIAL SETUP AND CONFIGURATION).
   - Set IP and Control preferences (see page 12).
   - Set SNMP preferences (see page 14).
   - Configure Management Processor VLAN support (see page 15).
   - Configure the Soft-switch Reload function (see page 16).

For information on remote access and firmware updating, see ACCESSING THE 10/100M REMOTELY, page 17, and UPDATING 10/100M FIRMWARE, page 18.

When the setup and configuration procedures are completed, the 10/100M is ready for use.

INITIAL SET UP AND CONFIGURATION:

Initial configuration is required when using the *DFCS* 10/100M for the first time. To configure, attach the 10/100M to a DB-9 serial (RS-232) equipped computer with terminal emulation software such as HyperTerminal. The 10/100M Serial Console Port is a mini DIN-6 female connector which can be changed to a DB-9 connector with the included adapter. Attach the ends of a serial cable to the serial port of the PC and the Serial Console Port of the 10/100M.

Start HyperTerminal and select the correct COM Port in the HyperTerminal "Connect To:" window.

Set the PC's serial port to the following:

Bits Per Second	57,600
Stop Bits	1
Data Bits	8
Parity	NONE
Hardware Flow Control	NONE

Power the 10/100M module and press <*ENTER*> to bring up a command line prompt on the attached PC. A new 10/100M module does not have a password, so the 10/100M will skip the ***Password Entry*** screen and go straight to the ***Management Options*** screen. If a password has been set, the ***Password Entry*** screen will be displayed. Type the password and press <*ENTER*>, the 10/100M will respond with the ***Management Options*** screen:

```
Management Options DFCS, Serial Agent
Network Management
1:  Chassis and Module Management
2:  Set Module Name Preferences
3:  IP and Control Preferences
4:  SNMP Preferences
5:  Abandon Preference Changes
6:  Save Preference Changes
7:  Restore Factory Defaults
8:  Restart
9:  Other Networking Features
Management Module Maintenance
10: Firmware Update
11: Update Date/Time
IP Address  = 192.168.1.220
Chassis Number = 1
Enter Choice, Help (h), Exit (x) >
```


Setting IP and Control Preferences:

An IP address is required for the SNMP manager to address the 10/100M. Its initial factory setting is 192.168.1.220. The IP address can be configured manually or automatically as a DHCP client.

Setting IP Parameters as DHCP Client:

To configure the IP automatically as a DHCP client, select *9* from the ***Management Options*** screen. The ***Other Networking Features*** screen will appear.

To enable DHCP client, select *1* at the ***Other Networking Features*** screen and follow the screen prompts to enable DHCP.

To save the new values, select *0* and press <*ENTER*> to return to the ***Management Options*** screen, then select *6* and press <*ENTER*> to ***Save Preference Changes***.

Setting IP Parameters Manually:

To manually configure the IP address and control parameters, select *3* from the ***Management Options*** screen. The ***IP and Control Preferences*** *Screen* will appear:

```
IP and Control Preferences Screen DFCS, Serial
Agent
1:  Set IP
2:  Set Subnet Mask
3:  Set Gateway
4:  Chassis Number
5:  Chassis Name (also sysName)
6:  Enable/Disable Telnet
7:  Enable/Disable FTP
8:  Enable/Disable Soft-switch Reload
9:  Telnet Password
10: FTP Password
11: Serial Password
Enter Choice, Management Options Screen(0),
Help(h), Exit(x) >
```

To configure the IP address of the 10/100M, select *1* at the ***IP and Control Preferences*** screen, and press <*ENTER*>. Backspace over the existing value, type the new value (in x.x.x.x format), and press <*ENTER*>.

To configure the subnet mask of the 10/100M, select *2* at the ***IP and Control Preferences*** screen, and press <*ENTER*>. Backspace over the existing value, type the new value (in x.x.x.x format), and press <*ENTER*>.

To configure the gateway of the 10/100M, select *3* at the ***IP and Control Preferences*** screen, and press <*ENTER*>. Backspace over the existing value, type the new value (in x.x.x.x format), and press <*ENTER*>.

To save the new values, select *0* and press <*ENTER*> to return to the ***Management Options*** screen, then select *6* and press <*ENTER*> to ***Save Preference Changes***.

Setting the Chassis Number and Name:

A Chassis Name, or sysName, can be assigned for identification of the 10/100M in the SNMP client. The name can be any 1-32 character alphanumeric string.

The Chassis Number must be set to 1 (factory default).

To set the Chassis Name, select *5* at the ***IP and Control Preferences*** screen, press <*ENTER*> and follow the instructions to enter the chassis name.

To save the new values, select *0* and press <*ENTER*> to return to the ***Management Options*** screen, then select *6* and press <*ENTER*> to ***Save Preference Changes***.

Setting 10/100M Passwords:

The 10/100M is shipped from the factory without password protection on the Serial Console Port. It is highly recommended that the network administrator set a password in order to prevent unauthorized access to the unit. The password can be any 1-32 character alphanumeric string.

The 10/100M is shipped from the factory with Telnet enabled and FTP disabled. From the ***IP and Control Preferences*** screen, select *6* to enable or disable Telnet, and select *7* to enable or disable FTP.

To set the password for Telnet access, select *9* at the ***IP and Control Preferences*** screen, press <*ENTER*> and then follow the screen prompts to enter and verify the password. The default password for Telnet access is "public".

To set the password for FTP access, select *10* at the ***IP and Control Preferences*** screen, press <*ENTER*> and

then follow the screen prompts to enter and verify the password.

To set the password for serial access, select *11* at the ***IP and Control Preferences*** screen, press <*ENTER*> and then follow the screen prompts to enter and verify the password.

To save the new values, select *0* and press <*ENTER*> to return to the ***Management Options*** screen, then select *6* and press <*ENTER*> to ***Save Preference Changes***.

SETTING SNMP PREFERENCES:

To set the SNMP Preferences of the 10/100M, select *4* from the ***Management Options*** screen, press <*ENTER*> to access the ***SNMP Preferences*** screen.

Setting SNMP Read and Write Community Names:

The SNMP Read Community Name is necessary for reading data from the 10/100M. The name can be any 1-32 character alphanumeric string. To set the SNMP Read Community Name, select *4* at the ***SNMP Preferences*** screen, press <*ENTER*> and then follow the screen prompts.

The SNMP Write Community Name is necessary for writing data to the 10/100M. The name can be any 1-32 character alphanumeric string. To set the SNMP Write Community Name, select *5* at the ***SNMP Preferences*** screen, press <*ENTER*> and then follow the screen prompts.

To save the new values, select *0* and press <*ENTER*> to return to the ***Management Options*** screen, then select *6* and press <*ENTER*> to ***Save Preference Changes***.

The 10/100M is shipped from the factory with the SNMP agent enabled. The default SNMP Read and Write Community name is "public".

Setting the SNMP Trap IP Host Addresses:

SNMP traps are used to report events that occur during the operation of a network, and may require the attention of the network administrator. The 10/100M is capable of sending SNMP traps to up to eight different SNMP Traphosts.

To enter the IP address of the first Traphost Address, select *4* at the ***Management Options*** screen to access

the ***SNMP Preferences*** screen. Select *6* at the ***SNMP Preferences*** screen and press <*ENTER*>. Then backspace over the existing value, type the new value (in x.x.x.x format), and press <*ENTER*>. To enter the IP addresses of additional trap-receiving Traphost Addresses, repeat this process for Traphost Addresses 2-8.

To save the new values, select *0* and press <*ENTER*> to return to the ***Management Options*** screen, then select *6* and press <*ENTER*> to ***Save Preference Changes***.

Enabling/Disabling SNMP Writes and SNMP Agent:

To configure the SNMP Writes and SNMP Agent, select *9* from the ***Management Options*** screen. The ***Other Networking Features*** screen will appear.

To disable or enable the SNMP Writes, select *8* from the ***Other Networking Features*** screen and follow the screen prompts.

To disable or enable the SNMP Agent, select *7* from the ***Other Networking Features*** screen and follow the screen prompts.

To save the new values, select *0* and press <*ENTER*> to return to the ***Management Options*** screen, then select *6* and press <*ENTER*> to ***Save Preference Changes***.

Setting the Remote OAM Management Mode:

To configure the Remote OAM Management Mode, select *1* at the ***Management Options*** screen and press <ENTER> to access the ***Chassis View*** screen. In the ***Chassis View*** screen, select the Slot Number in which the 10/100M is installed.

To select the Remote OAM Management Mode, select *18* at the ***Module Management*** Screen, press <ENTER> and then follow the screen prompts to select Secure OAM, 802.3ah OAM or OAM off.

MANAGEMENT PROCESSOR VLAN SUPPORT:

The 10/100M Management Processor can independently transmit and receive Management Data with the IEEE 802.1Q tag. This feature is accessible via the Serial Console Port

(using HyperTerminal or any other third-party terminal emulation program) or SNMP management software such as *DFCS* SNMP (please refer to the *DFCS* SNMP Management Software user manual for more information). To enable and configure this feature using HyperTerminal, type *9* from the ***Management Options*** screen to access the ***Other Networking Features*** screen (not shown).

To configure the IEEE 802.1Q VLAN ID (VID), type *3* at the ***Other Networking Features*** screen, press <*ENTER*> and follow the instructions to assign the VID for the Management Data.

To set the IEEE 802.1p Priority (PRI), type *4* at the ***Other Networking Features*** screen, press <*ENTER*> and follow the instructions to assign the PRI for the Management Data.

To enable IEEE 802.1Q VLAN processing for the Management Processor, type *2* at the ***Other Networking Features*** screen, and follow the instructions to enable VLAN processing.

To save the new values, type *0* and press <*ENTER*> to return to the ***Management Options*** screen, then type *6* and press <*ENTER*> to ***Save Preferences Changes***.

Note that for more information on configuring the switch VLAN capabilities, please refer to the *DFCS* Management Software user manual.

ENABLING/DISABLING SOFT-SWITCH RELOAD:

The Soft-switch Reload function controls the DIP-switch configurations of the 10/100M following a power up.

When the Soft-switch Reload is disabled, the DIP-switch configuration of the 10/100M following a loss of power is determined by the hardware DIP-switch settings. The DIP-switch settings overwrite any previous software settings stored in the FLASH memory.

When the Soft-switch Reload is enabled, DIP-switch configuration following a loss of power is determined by the previous software settings stored in the FLASH memory of the 10/100M. Also, the actual hardware DIP-switch settings are ignored until a change is physically made to the hardware DIP-switch settings, and then the new hardware DIP-switch settings take effect.

To set the Soft-switch Reload function, select *8* at the ***IP and Control Preferences*** screen, press <*ENTER*> and then follow the screen prompts to change the setting.

To save the new values, select *0* and press <*ENTER*> to return to the ***Management Options*** screen, then select *6* and press <*ENTER*> to ***Save Preference Changes***.

ACCESSING THE 10/100M REMOTELY:

Remote access to the 10/100M is provided via SNMP, Telnet, FTP or an external serial modem connected to the Serial Console Port.

Accessing the 10/100M via SNMP:

The SNMP service can be remotely accessed by SNMP-client software such as *DFCS* SNMP or any third-party SNMP management software.

For more information on using and configuring the SNMP service, please refer to the *DFCS* SNMP Management Software user manual.

Accessing the 10/100M via Telnet:

The 10/100M is shipped from the factory with Telnet enabled. The default Telnet password is "public". It is highly recommended that the network administrator set a new Telnet password in order to prevent unauthorized access to the unit.

Telnet access can be enabled or disabled at the ***IP and Control Preferences*** screen. This screen also contains an option to set the Telnet password.

The 10/100M may be accessed and configured via Telnet using any standard Telnet client. Only one Telnet session can be active at a time. An inactive Telnet session terminates automatically after 5 minutes.

Accessing the 10/100M via Remote OAM:

The 10/100M can be accessed through Remote Management, also referred to as IP-Less or Side-Band management. Remote Management is available in Secure OAM or 802.3ah OAM protocols. The 10/100M is shipped from the factory with Secure OAM enabled. Remote Management can be disabled by the user. For detailed instructions on this procedure, please contact Customer Support.

Accessing the 10/100M via External Serial Modem:

The 10/100M can be accessed through an external modem to provide remote access and management. Please contact Customer Support for details.

Accessing the 10/100M Trap Log via FTP:

FTP access is disabled by default, and can be enabled or disabled at the ***IP and Control Preferences*** screen. This screen also contains an option to set the FTP password.

To access the 10/100M via FTP, initiate an FTP application to the 10/100M IP Address, log in as user "DFCS" and use the FTP password assigned during the configuration of the 10/100M.

A copy of the SNMP trap log is in the FTP root directory. The log can be downloaded with the FTP application.

UPDATING THE 10/100M FIRMWARE:

Updating the 10/100M firmware allows administrators to upgrade the firmware within the management module and take advantage of new features.

Updating the Firmware via the Serial Console Port:

To update the 10/100M firmware from the Serial Console Port, select *10* at the ***Management Options*** screen, press <*ENTER*>. The 10/100M will display the following:

```
Enter Choice, Help(h), Exit(x) > 10
UPDATE: Are you sure? [Y/N] > Y
Please Xmodem file now:
```

From the terminal program, use the Xmodem protocol to send the new 10100M-xxx.bin firmware file to the 10/100M module (where xxx represents the release level of the software).

Once the file transfer begins, the data uploads to the 10/100M. The process takes about five minutes over a serial connection.

When the upload is complete, the 10/100M displays the update status and then automatically restarts with the newly loaded firmware.

Updating the Firmware via FTP:

Using an FTP application, upload the new firmware into the FTP root directory of the 10/100M. When the file transfer is complete, the 10/100M verifies the file and then automatically restarts with the newly loaded firmware.

10/100M LED INDICATORS:

LED Function "Legend"	Color	Off State	On / Blinking State
Power "Pwr"	Amber	No power	On: Module has power
Network Ports Status*			
100Mbps Fiber Optics "FO"	Green	No Fiber Link	On: Fiber link is active Blinking: Receiving Fiber Data
UTP port 10 Mbps "10"	Green	10Mbps not active	On: 10Mbps mode selected and the UTP link is active Blinking: Receiving UTP Data
UTP port 100 Mbps "100"	Green	100Mbps not active	On: 100Mbps mode selected and UTP link is active Blinking: Receiving UTP Data
UTP port Full-Duplex "FDX"	Green	Half-Duplex when UTP link is active	On: Full-Duplex and UTP link is active
*Review Link Modes section for other LED display patterns			

10/100M SPECIFICATIONS

Description	10/100 UTP to 100 Fiber Converter with integrated management
Protocols	10Base-T, 100Base-Tx,100Base-Fx with 1536 bytes max. frame size
UTP Cable Type	EIA/TIA 568A/B Category 5 and higher
Fiber Cable Types	Multimode:50/125,62.5/125, 100/140um Single-mode: 9/125 um
Serial	RS-232, 22 to 24 AWG, 12 to 50 pF/ft
Connector Types	
UTP Connector Type	RJ45
Fiber Connector Types	Dual fiber: SC, ST, LC, MT-RJ Single-fiber: SC
Serial	Mini DIN-6 female, mini DIN-6 male to DB-9 female adapter included
802.1p Priority Levels and VID Priority Level Groups	4 Levels (PRI 0-1, 2-3, 4-5, 6-7)
Controls	
DIP-Switches	Pause, LS/LP, RFD, SFD, AN/Man, 10/100, HDX/FDX (Fiber and UTP)
Power Requirements	
DC Power	5-16VDC/0.7Amp*
DC Power Connector	2.5mm Barrel Connector or Field-wireable Terminal Connector
AC Power Adapter [US]	100-120VAC/60Hz/60mA
AC Power Adapter [International]	100-240VAC/50-60Hz/60mA
Dimensions (WxDxH)	Tabletop: 3.4"x4.7"x1.0" Wall-Mountable: 3.8"x4.7"x1.0"
Weight without Power Adapter	1 lb.
Weight with Power Adapter	1.5 lb.
Compliance	UL, CE, FCC Class A
Temperature	
Operational - Commercial	0 to +50ºC
Storage	-50 to +80ºC
Humidity (non-condensing)	0-95%
Altitude	0-10,000
MTBF [hrs]	
without AC Power Adapter	600,000
with AC Power Adapter	250,000
MTTR	5 min.
* Note: Operation below 8VDC results in degraded functionality of the Dying Gasp (Power Loss Trap).	

TRADEMARKS

All applied-for and registered trademarks are the property of their respective owners.

FEDERAL COMMUNICATIONS COMMISSION AND CANADIAN DEPARTMENT OF COMMUNICATIONS RADIO FREQUENCY INTERFERENCE STATEMENTS

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to be cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numéirques de las classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par le ministère des Communications du Canada.

NORMAS OFICIALES MEXICANAS (NOM)

ELECTRICAL SAFETY STATEMENT

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc.
6. El aparato eléctrico debe ser usado únicamente con carritos o pedelstales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra or superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.
10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u ostros aparatos (incluyendo amplificadores) que producen calor.
11. El aparato eléctrico deberá ser connectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.
12. Precación debe ser tomada de tal manera que la tierra fisica y la polorizacion del equipo no sea eliminada.
13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.
14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las lineas de energia.
16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.
17. Cuidado debe ser tomado de tal manera que objectos liquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
    A: El cable de poder o el contacto ha sido dañado; u
    B: Objectos han caído o líquido ha sido derramado dentro del aparato; o
    C: El aparato ha sido expuesto a la lluvia; o
    D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
    E: El aparto ha sido tirado o su cubierta ha sido dañada.

CUSTOMER SUPPORT INFORMATION

Order **toll-free** in the U.S.: Call **877-877-BBOX** (outside U.S. call **724-746-5500**)

FREE technical support 24 hours a day, 7 days a week; Call **724-746-5500** or fax **724-746-0746**

Mailing address: **Black Box Corporation**, 1000 Park Drive, Lawrence, PA 15055-1018

Web site: **www.blackbox.com**

E-mail: **info@blackbox.com**

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